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ADOLESCENT SMOKING INTENTIONS: GENDER DIFFERENCES IN PEER CONTEXT

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ABSTRACT

Despite widespread interest in adolescent smoking behaviour, little research has been directed to the social dynamics of adolescent smoking. In this paper, smoking intentions and peer group influences among a sample of 1689 grade eight students from Southern Ontario are analyzed to ascertain possible gender specific correlates in adolescent smoking intentions. The peer environment is found to be a crucial factor in adolescent smoking behaviour. Particularly striking for adolescent girls is the firmness of their expressed intentions to continue to smoke quite early in their smoking lives.

INTRODUCTION

Historically women have smoked less than men, although during the past twenty-five years, there has been a convergence of female and male smoking rates. A Statistics Canada survey (1989) reports an overall decline in smoking, from 43 percent in 1966 to 28 percent. The decline, however, is greater among men than among women. Health and Welfare Canada (1988) reports some evidence that regular smokers are smoking more cigarettes per day. Cigarettes are still smoked regularly by an estimated 2.5 million Canadian women or 25.8% of all females over the age of 15 (Health and Welfare Canada, 1988). There are about 500,000 smokers in Canada between the ages of 13 and 19, approximately 20% of the adolescent population (Statistics Canada, 1989). Further, while children in the past started smoking at approximately age 16, today children are starting to smoke as early as age 12 and 90 percent start before age 18 (Statistics Canada, 1989). Adolescent women now have the highest rates of smoking of any age-gender group (Health Promotion Survey, 1988).

Much of the research on smoking is based on a combination of psychological and physiological approaches to explain differential female and male smoking rates and patterns. Gender has been insufficiently examined as a critical factor/influence in smoking initiation, maintenance and cessation behaviours of adolescents. The focus of this study is on the social dynamics of adolescent smoking. By focusing on social context as a factor in smoking behaviour, our intent is to enhance understanding of adolescent women's commitment to smoking. Although some research has attempted to determine the gender-specific correlates of smoking behaviour, almost no research has focussed on the social contexts of adolescent smoking.

A common avenue to smoking initiation among both male and female adolescents is a social situation in which parents, siblings or peers smoke (Friedman, Lichtenstein and Biglan, 1985; Castro et al, 1987; Hundleby and Mercer, 1987; van Reek et al., 1987). The peer group is of paramount importance as a primary influence in determining adolescent behaviour (Pederson, Baskerville and Lefcoe, 1983; Pederson and Lefcoe, 1985). Adolescents engage in certain behaviours due to the favouring of those behaviours by significant others, most often peers (Aitken, 1980; Friedman, Lichtenstein and Biglan, 1985; Pederson and Lefcoe, 1985). The strongest influence comes from those

peers who are regarded as close friends rather than only acquaintances (Cohen, 1983; Coleman, 1981). Aaro, Hauknes and Berglund (1981) suggest that girls, more often than boys, report that their best friend is a smoker. Charlton and Blair (1989) also noted that fewer boys report that their best friend smokes. Van Roosmalen and McDaniel (1989), on the other hand, find that boys who smoke are more likely to state that their best friend smokes, but more female adolescent smokers report that many of their friends smoke. When none of their friends smoke, a smaller proportion of females smoke than males. Male/female differences in conformity may result from cultural stereotypes that see female adolescents as more likely to yield to peer pressure than males (Campbell, 1963). Without differentiating by sex, Health and Welfare Canada (1987) estimates that "a person with smoking friends is almost seven times more likely to smoke than a person with no friends who smoke (p.32). Whereas if none of a person's friends smoke, the chances are less than one in ten that they will smoke.

Studies of peer influence on adolescents conclude that both friendship groups and reference groups are important in the development of adolescent attitudes and behaviours (Hallinan, 1983). Specifically, peer influence has been identified as a core factor in the initiation and/or maintenance of smoking during adolescence (Aiken, 1980; Hundleby and Mercer, 1987; Pederson, Baskerville and Lefcoe, 1981; Skinner et al., 1985). Either through the influence of a best friend (Aaro, Hauknes and Berglund, 1981; Chassin et al, 1981; Krohn et al., 1986; Lauer et al., 1982; McCaul et al., 1982; Pederson, Baskerville and Lefcoe, 1983; van Reek, Drop and Joosten, 1987), or a group of friends (Pederson and Lefcoe, 1985; Skinner et al., 1985), peers are central to smoking initiation by adolescents. The question is, are peers a central influence on adolescent smoking intentions?

The purpose of the present study is to explore gender differences in adolescent smoking intentions in peer context. Specifically, our aim is to determine whether a best friend, friends in general or a close friend of the opposite sex have potentially different influences on smoking intentions of girls, compared to boys.

This inquiry sheds light on the future of adolescent smoking behaviour. Intention to smoke has been found to be significantly related to future smoking behaviour (Hiob, 1984), and predictive

of experimental smoking between the end of grade seven and the end of grade eight, among adolescents who had never tried smoking by the end of grade seven. Green (1979) and Chassin et al (1981) report that one of the best predictors of future smoking is adolescent's intention to smoke.

DATA AND METHODS

The data for this study are from the Waterloo Smoking Prevention Project, Study II (WSPP II), a research program designed to determine the effects of different prevention conditions on the smoking habits of southern Ontario adolescents. The first part of the program consists of three components: (1) Information - on the negative consequences of smoking, statistics on smoking and examples of situations in which there is perceived pressure to smoke; (2) Skills development - sessions in which students practice ways of resisting social pressures; and (3) Decision making and commitment - in which students integrate the information they have received in the previous sessions and make a decision as to whether they should smoke or not. These were delivered in six, 40 minute, weekly sessions to participating students in the middle of Grade 6.

Smoking status of respondents was ascertained by a self-report questionnaire, including items on background, respondent's smoking status, future smoking intentions, sibling, peer and parental smoking behaviours, and questions about the number and composition of their peer groups.

Procedures such as the bogus pipeline and cotinine analysis were used in the WSPP II to increase accuracy of reporting by respondents. The bogus pipeline procedure involves the collection of saliva samples and the use of videotapes, films and/or explanations which illustrate how saliva can be analyzed for cotinine and how cotinine level differs for smokers and non-smokers. After explaining the cotinine procedure and before filling out the questionnaire, each student was asked to provide a saliva sample. Use of the bogus pipeline and cotinine procedures increase the accuracy in students who report their smoking status. A study by Evans et al. (1978) reports that twice as many students exposed to the bogus pipeline procedure admitted that they smoked weekly. This method has been used successfully in other studies of smoking behaviour to increase the validity of self-reported smoking (Luepker et al., 1981; Perry et al., 1980).

Our study is a secondary analysis [1] of the Waterloo Smoking Prevention Project study II data. The sample analyzed here consists of 1689 male and female students from the eighth grade (age 13 approximately). The students are from 42 schools in five school districts in southern Ontario. Schools within each district were matched with respect to socio-economic status, older student in school smoking rates, and grade six teacher smoking rates. Although the WSPP II follows the same students from grades six through eight, in this study we analyze only the grade eight sample. It is not until grade eight that a substantial number of students report measurable levels of smoking behaviour.

BACKGROUND CHARACTERISTICS OF RESPONDENTS

Of our sample of 1689 adolescent students, 48.3 percent are male and 49.8 percent female. Overall, 45.4 percent of adolescent students indicate that their fathers smoke, 34.4 percent of their mothers, 21 percent claim to have at least one brother who smokes and 19.4 percent have at least one sister who smokes.

Forty-five percent of adolescent students state that their best friend has never smoked; 39.9 percent state that their best friend has tried smoking and 15.3 percent state that their best friend smokes regularly. When examining the smoking behaviour of adolescents' friends, 22.5 percent claim that none of their friends smoke; 22.8 percent have a few friends who have tried smoking; 19.1 percent have many friends who have tried; 33.8 pecent have a few friends who smoke regularly and 1.9 percent have many friends who smoke regularly.

FINDINGS

Male/female differences among grade eight students in our sample in smoking status are shown in Table 1. It is not surprising that among Grade 8 students, those students who have never smoked outnumber those who have or do smoke. There are proportionately more female non-smokers than male non-smokers, [2] 53.9 percent compared to 45.0 percent, respectively. Proportionately more

[1] This simply means that the issues of interest to us were not analyzed as part of the initial study, but the data were made available to us to analyze.
[2]Non-smokers are defined as those who have never smoked or who have only tried smoking once.

TABLE 1: BACKGROUND CHARACTERISTICS OF RESPONDENTS RELATED TO THEIR SMOKING BEHAVIOURS AND POTENTIAL FAMILIAL SMOKING INFLUENCES

POTENTIAL FAMILIAL INFLUENCES	NON SMOKER	QUIT	SMOKER	TOTAL
MALE	45.0	38.3	16.7	813
Have at least one parent who smokes	41.3	39.3	19.4	431
Have a mother who smokes	40.7	37.8	21.5	275
Have a father who smokes	42.3	39.3	18.4	364
Have at least one sibling who smokes	32.0	41.4	26.6	256
Have at least one brother who smokes	32.5	41.4	26.0	169
Have at least one sister who smokes	30.8	43.2	26.0	146
FEMALE	53.9	29.1	17.0	841
Have at least one parent who smokes	45.9	31.8	22.3	466
Have a mother who smokes	43.9	29.8	26.3	289
Have a father who smokes	47.3	31.1	21.5	376
Have at least one sibling who smokes	33.1	37.1	29.9	278
Have at least one brother who smokes	33.1	39.1	27.8	169
Have at least one sister who smokes	28.8	39.4	31.8	170

males report themselves as quitters [3] than females, 38.3 percent and 29.1 percent respectively. There are roughly the same proportion of males and females who consider themselves smokers. [4] The higher proportion of males reporting having quit smoking may be attributable to males starting to smoke sooner than females.

Also found in Table 1 are familial smoking behaviours. These are presented in the hopes of developing a picture of possible influences that familial smoking and not only peer smoking may have on adolescents.

Familial influences become apparent with regard to adolescent smoking behaviour when we look at Table 1. Initially, we note that 16.1 percent of males and 17 percent of females are defined as smokers. When we take into account, mother, father, brother and sister smoking influences, we note higher proportions of both male and female smokers. What is particularly interesting to note is that under all types of familial influences presented in Table 1, there is a higher proportion of female smokers than male smokers. This leads us to believe that female adolescents more than male adolescents are influenced by smoking behaviours of family members. The next question is the effect of peer influence.

Table 2 shows the different types of potential peer influence on the smoking behaviour of adolescent students. Both males and females smoke more often when they have a best friend who smokes regularly. [5] This is particularly evident for the female smoker, where 62.4 percent of females who state their best friend smokes regularly also smoke, compared to 56.6 percent of males.

We also note from Table 2, that when many friends have tried smoking, approximately 40 percent of both males and females smoke. We further note a relationship between having a close

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[3]Quitters are defined as those who previously smoked regularly or had experimented with smoking but no longer do so.

[4]Smokers are defined as those who either experiment with or smoke cigarettes on a regular basis.

[5] Although Table 2 indicates that 71.4% of females who claim to have many friends who smoke regularly also smoke, we do not include these findings in our discussion due to the extremely small sample size. With such a small sample size we cannot assume reliablility of these results.

TABLE 2: BACKGROUND CHARACTERISTICS OF RESPONDENTS RELATED TO THEIR SMOKING BEHAVIOURS AND POTENTIAL PEER SMOKING INFLUENCES, BY SEX

POTENTIAL PEER INFLUENCE	NON SMOKER	QUIT	SMOKER	TOTAL
MALE				
Best friend never smoked	69.5	27.7	2.8	361
Best friend tried smoking	31.9	52.6	15.5	310
Best friend smokes regularly	10.3	33.1	56.6	136
Friends have never smoked	73.9	22.7	3.4	203
Few have tried smoking	57.1	38.1	4.8	184
Many have tried smoking	16.3	43.7	40.0	135
Few smoke regularly	32.1	45.2	22.7	255
Many smoke regularly	20.8	58.4	20.8	24
Close friend of the opposite sex does not smoke	54.6	37.6	7.8	463
Close friend of the opposite sex does smoke	24.7	41.1	34.1	287
FEMALE				
Best friend never smoked	73.0	45.8	17.1	374
Best friend tried smoking	20.9	40.9	20.5	347
Best friend smokes regularly	6.1	13.2	62.4	117
Friends have never smoked	83.0	16.4	0.6	165
Few have tried smoking	72.3	22.9	4.8	188
Many have tried smoking	20.7	35.6	43.7	174
Few smoke regularly	46.6	36.2	17.1	298
Many smoke regularly	14.3	14.3	71.4	7
Close friend of the opposite sex does not smoke	67.0	24.9	8.1	394
Close friend of the opposite sex does smoke	33.7	37.1	29.2	353

friend of the opposite sex who smokes and the smoking behaviour of adolescent students. Under this condition, we find that 34.1 percent of males smoke and 29.2 percent of females. [6]

When we compare the potential peer influence with potential familial influence we find that when peers smoke, a higher proportion of adolescents also smoke. [7] The exception to this is female adolescents who have at least one sister who smokes. Here we find that 31.8 percent of females who state that they have a sister who smokes also smokes.

Among adolescents who smoke, males tend to be more definite than females in their stated intentions to quit smoking, as shown in Table 3. A larger proportion of males indicate that they believe they will stop smoking within the next year. More females admit that they are not sure if they will quit smoking. Little difference is found between the proportion of male smokers who state they will quit (53.0%), and those who state they are not sure if they will quit (47.0%). This is not the case for females. Forty-seven percent of girls report they intend to quit, whereas, 67.1 percent report that they are not sure if they will quit.

When controlling for parental and sibling smoking influences, girls still remain less convinced than boys that they will quit smoking (refer to Table 3). Thirty-three percent of males who have a brother who smokes claim they are not sure if they will quit smoking. This compares to 68.9 percent of females. Forty-seven percent of males who have a sister who smokes claim they are not sure if they will quit smoking, compared to 72.7 percent of females. A similar pattern emerges for parental smoking influence. Forty-five percent of males who have a father who smokes and 51.8 percent who have a mother who smokes are not sure, whereas 63.8 percent of females who have a father who smokes and 69.7 percent who have a mother who smokes are not sure if they will quit smoking.

Further differences occur when the influence of a single best friend or a group of friends who smoke is introduced. Seventy-two percent of females who state that many of their friends have tried

[6] For a more detailed analysis of peer group influence refer to van Roosmalen and McDaniel, 1989.

[7] Due to the nature of the question asked of respondents, it should be kept in mind that we cannot determine causality from these data.

TABLE 3: PERCENTAGE OF ADOLESCENT STUDENTS (SMOKERS ONLY) REPORTING INTENTIONS QUIT SMOKING IN ONE YEARS TIME, BY SEX AND FAMILIAL SMOKING INFLUENCE

	Will quit within one year	Not Sure	Total
TOTAL			
Male	53.0	47.0	132
Female	32.9	67.1	140
MALE			
Have at least one brother who smokes	66.7	33.3	42
Have at least one sister who smokes	52.8	47.2	36
Have a father who smokes	55.4	44.6	65
Have a mother who smokes	48.2	51.8	56
FEMALE			
Have at least one brother who smokes	31.1	68.9	45
Have at least one sister who smokes	27.3	72.7	54
Have a father who smokes	36.2	63.8	80
Have a mother who smokes	30.3	69.7	76

smoking indicate that they are not sure if they will quit compared to 61.4 percent of those who state that their best friend has tried smoking (refer to Table 4). And when their best friend smokes regularly, 77.8 percent state they are not sure if they will quit smoking. By contrast, 49 percent of males indicate that they are not sure if they will quit smoking when they report that many of their friends have tried smoking, while 43.5 percent claim this when their best friend has tried and 49.3 percent when their best friend smokes regularly. [1] When girls have a close friend of the opposite sex who smokes, they are also more inclined than boys to indicate that they are not sure if they will quit smoking. However, as is evident from Table 4, there is minimal difference between having a close friend of the opposite sex who smokes and having one who does not smoke. This appears to the true for both boys and girls.

Under all but one of the conditions studied, boys are more definite in their plans to quit smoking than girls who are more likely to be unsure if they will quit. The exception to this occurs among adolescents who claim that few of their friends have tried smoking. Here we find equal proportions of boys and girls asserting they will quit smoking within the following year.

When examining respondents' intentions to smoke in one year's time, few differences by gender within the non-smoking or quit categories emerge, as shown in Table 5. Over ninety percent of both male and female non-smokers report that they will not smoke in one year's time. Similarly, within the quit category, over eighty percent report that they will not be smoking one year hence. Within the smoking category, male/female differences are apparent, however. Twenty-nine percent of male smokers report that they will not be smoking in one year, compared to only 17.6 percent of female smokers. On the other hand, 42.3 percent of female smokers state that there is a 50:50 chance that they will still be smoking, compared to 35.6 percent of males. Forty percent of female smokers report that they will be smoking compared to 35.6 percent of male smokers. The pattern seems to be that once an adolescent girl is a smoker, she is more likely to anticipate that she will continue to smoke.

[1] Once again we can say little about the relationship between respondents moking intentions and many friends who smoke regularly due to extremely small sample sizes.

TABLE 4: PERCENTAGE OF ADOLESCENT STUDENTS (SMOKERS ONLY) WHO FORSEE THEMSELVES QUITTING SMOKING IN THE NEXT YEAR, BY SEX AND PEER SMOKING BEHAVIOUR

Sex/Peer Smoking Behaviour	Will quit smoking	Not sure	Total
TOTAL			
Male	53.0	47.0	132
Female	32.9	67.1	140
MALE			
Best friend never smoked	60.0	40.0	10
Best friend tried	56.5	43.5	46
Best friend smokes	50.7	49.3	75
FEMALE			
Best friend never smoked	56.5	43.5	23
Best friend tried	38.6	61.4	44
Best friend smokes	22.2	77.8	93
MALE			
Friends have never smoked	28.6	71.4	7
Few have tried	44.4	55.6	9
Many have tried	51.0	49.0	51
Few smoke regularly	59.6	40.4	57
Many smoke regularly	60.0	40.0	5
FEMALE			
Friends have never smoked	0.0	100.0	1
Few have tried	44.4	55.6	9
Many have tried	28.0	72.0	75
Few smoke regularly	34.7	65.3	49
Many smoke regularly	80.0	20.0	5
MALE			
Close friend of the opposite sex does not smoke	57.6	42.4	33
Close friend of the opposite sex does smoke	50.5	49.5	97
FEMALE			
Close friend of the opposite sex does not smoke	35.5	64.5	31
Close friend of the opposite sex does smoke	31.7	68.3	101

TABLE 5: PERCENTAGE OF ADOLESCENT STUDENTS WHO FORSEE THAT THEY WILL BE SMOKING IN ONE YEARS TIME, BY SEX AND PRESENT SMOKING BEHAVIOUR

Sex/Present smoking Behaviour	Will not be smoking	50:50 chance	Will be smoking	Total
TOTAL				
Male	78.8%	11.4%	10.6%	800
Female	76.1	13.6	10.3	833
MALE				
Non-smoker	91.3	2.5	6.3	367
Quit	83.8	11.4	4.9	303
Smoker	28.8	35.6	35.6	132
FEMALE				
Non-smoker	91.8	3.5	4.6	453
Quit	80.9	15.4	3.7	241
Smoker	17.6	42.3	40.1	132

No significant differences are found when parental and sibling influences are taken into account. When we examine the relationship between respondents smoking and peer smoking, however, the findings on smoking intentions change for particular peer relationships. (Refer to Table 6).

A positive correlation is found for both males and females between respondents' intention to smoke in the future and the smoking habits of his/her best friend. Our analysis indicates that this relationship is slightly stronger for males than females. For example, 78.8 percent of male smokers report that they will not be smoking in one year (refer to Table 5). When having a best friend who smokes regularly is introduced, only 42.9 percent of males state that they will not smoke one year hence. Conversely, 32.3 percent of males state that they will smoke one year hence (refer to Table 6). In contrast, for females we find a change from 76.1 percent who claim that they will not smoke one year hence (see Table 5), to 35.3 percent, when they have a best friend who smokes regularly (refer to Table 6). Similarly, a change from 10.3 percent to 30.2 percent who claim that they will smoke one year hence.

When we examine the relationship between respondents' friends smoking behaviour and respondents smoking intentions, we note a further change from the baseline percentage in respondents intentions. Previously we noted that 10.6 percent of males and 10.3 percent of females state they will be smoking one year hence (top of Table 5). When respondents have many friends who have tried smoking, this baseline percentage changes to 21.8 percent for males and 23.7 percent for females. The only other increase from the baseline percentage occurs when respondent's close friend of the opposite sex smokes.

DISCUSSION AND CONCLUSION

The social dynamics of the peer environment is a crucial factor in both male and female adolescent smoking initiation and subsequent smoking behaviour. The stronger the friendship bond (ie., best friend vs. aquaintances) of friends who smoke, the less likely that smokers are decisive about quitting. Similarly, for both males and females, the stronger the friendship bond of friends who smoke regularly, the greater the chances of adolescents reporting that they expect to be smoking one

TABLE 6: PERCENTAGE OF ADOLESCENT STUDENTS WHO FORSEE THEMSELVES SMOKING IN ONE YEARS TIME, BY SEX AND PEER SMOKING BEHAVIOUR

Sex/Peer Smoking Behaviour	Will not be smoking	50:50 chance	will Be smoking	Total
TOTAL				
Male	78.0%	11.4%	10.6%	800
Female	76.1	13.6	10.3	833
MALE				
Best friend never smoked	88.4	5.5	6.1	624
Best friend tried smoking	81.0	12.4	6.5	91
Best friend smokes regularly	42.9	24.8	32.3	85
FEMALE				
Best friend never smoked	87.6	6.2	6.2	634
Best friend tried smoking	77.4	14.5	8.1	113
Best friend smokes regularly	35.3	34.5	30.2	86
MALE				
No friends smoke	88.0	2.0	10.0	200
Few have tried	89.1	6.6	4.4	183
Many have tried	57.9	20.3	21.8	133
Few smoke regularly	74.5	16.9	8.6	255
Many smoke regularly	65.2	13.0	21.7	23
FEMALE				
No friends smoke	91.5	2.4	6.1	164
Few have tried	89.2	6.5	4.3	186
Many have tried	48.0	28.3	23.7	173
Few smoke regularly	76.4	15.8	7.7	297
Many smoke regularly	42.9	0.0	57.1	7
MALE				
Close friend of opposite sex does not smoke	85.4	6.5	8.1	459
Close friend of opposite sex smokes	63.5	21.4	15.1	285
FEMALE				
Close friend of opposite sex does not smoke	86.2	6.9	6.9	392
Close friend of opposite sex smokes	60.9	22.5	16.6	350

year hence. Particularly evident among female adolescents is the firmness of the expressed intention to continue to smoke early in her smoking life.

Girls who are non-smokers have more friends who smoke than boys. It is quite possible that this may be a contributing factor in girls believing that they eventually will take up the smoking habit. Peer influence is very important in adolescent experimentation with cigarettes (Hundleby and Mercer, 1987; Leventhal and Cleary, 1980; Pederson and Lefcoe, 1985; van Roosmalen and McDaniel, 1989). When many female adolescents who do not smoke have friends who smoke, there is reason for concern. Smoking behaviour is learned through interacting with others who smoke. The longer the duration or intensity of the association, the greater the likelihood of the adolescent acquiring attitudes favourable to smoking. Female adolescents who do not smoke, but have friends who do, receive a combination of attitudes and social influences, direct and indirect, favourable to smoking, which in turn may increase their chances of taking up cigarette smoking.

Our findings indicate that girls may be less likely to quit smoking and/or more likely to believe that they will smoke in the future in part because their peers and family members are smokers. Adolescents are more likely to smoke if most or all of their friends smoke (Pederson, Baskerville and Lefcoe, 1981). Association with friends who smoke is the strongest correlate of adolescent cigarette smoking (Chassin et al., 1981; Hundleby and Mercer, 1987; Krohn et al., 1986; van Reek, Drop and Joosten, 1987) More opportunities are presented to adolescents to smoke by friends who smoke. This may particularly characterize the female adolescent because it is she who indicates having intentions to smoke which reflect the smoking behaviour of her friends who smoke, whether, a best friend, friend of the opposite sex, or aquaintances. Thus, more girls than boys are in peer contexts favourable to smoking.

Alternatively, females may be more conforming as a function of gender differences in friendship groups. It has been found, for example, that male friendship groups tend to be larger than female (Dweck, 1981; Karweit and Hansell, 1983). This is explained by the preference of boys and girls for different activities. The activity may structure peer group expectations. Males are more concerned with asserting status and developing independence. Female small group interactions lead to

friendships based on affiliation and mutuality. This may explain why females tend to be more conforming. Other studies find that adolescent females tend to have a higher level of anxiety and insecurity about friendships, a greater fear of rejection by friends (Coleman, 1981), higher levels of vulnerability to impulsive behaviour and difficulty in acquiring a positive body image (Freedman, 1984). All of these place females in a vulnerable position to the alluring appeal of smoking (Gritz, 1986).

Evidence of additional gender differences are found in relation to smoking influences from family. Our findings indicate that a larger proportion of adolescent girls are smokers when they have family members who smoke. This is more true for adolescent girls than boys. The finding that girls are more influenced by family smoking patterns than are boys is consistent with other research findings of Aaro, Hauknes and Berglund (1981), Brown, Cherry and Forbes (1980) and Gliksman et al (1989). Booth's (1972) study of friendship dyads suggest that gender differences in socialization whereby girls and women are more active in, and attuned to, kin networks, may be a factor. Not only are girls socialized to have closer family ties, but they are also encourged to have greater bonds of intimacy, and hence may be open to more influence by parents and siblings.

These findings have important implications for the development of health promotion programs. It may be that the social context of smoking for women makes it easier for women to start smoking and more difficult for them to quit. The finding that adolescent girls so firmly believe they will be smoking in the future, if they smoke now, is cause for concern about the future health of women.

The sharp recent increase in female morbidity and mortality due to cigarette smoking (Edwards, 1986; Gritz, 1984; U.S. Public Health Service, 1980; 1982) underlines the need to see smoking prevention in gender context. There is evidence to suggest that women still believe that disease and death from cigarette smoking are more common among men and that women have a kind of 'immunity' (Brown, Cherry and Forbes, 1980; Silverstein, Feld and Kozlowski, 1980). Tagliacozzo and Vaughn (1980) also suggest that although females are more likely to be aware of the health hazards and risks associated with cigarette smoking, they are also more inclined to accept the myth

that these hazards affect males more than females (Gritz, 1984, 1986; McGuffin, 1982; Tagliacozzo and Vaughn, 1980). This may be due to the highly publicized health risks to men of smoking, particularly of lung cancer and heart disease (Brown, Cherry and Forbes, 1980). The 1980 Report of the U.S. Surgeon General states "women are not immune to the damaging effects of smoking already documented,... that the first signs of an epidemic of smoking related diseases among women are now appearing" (U.S. Public Health Service, 1980). This may also be a function of females' underestimation of their own vulnerability in their concern for others. Smoking is also related to other risk-taking. For example, adolescents who smoke are also more likely to engage in sexual relations. Hunter, Webber and Berenson (1980) report that girls 16-17 using oral contraceptive are more likely to be smokers. This is in the wake of public information campaigns on elevated health risks when smoking and oral contraceptive use are combined (Hunter, Webber and Berenson, 1980).

Although research evidence is accumulating which suggests that males and females initiate smoking and quit in different social contexts and for different reasons, this understanding has yet to be fully incorporated into prevention programs. Smoking prevention programs aimed at adolescents tend to include (1) a presentation of the hazards of smoking in an attempt to change adolescent attitudes towards smoking and to reduce their chances of starting; (2) a social learning approach in which adolescents are informed of the social pressures on them to smoke (peer, parental, sibling, media, etc.), and how to recognize and resist these influences (Evans et al., 1978; Leventhal and Cleary, 1980); (3) and behavioural learning techniques, involving role playing, in which a peer leader plays the role of resisting pressure to smoke (Best et al., 1984; Flay et al., 1985). The idea is to help adolescents to develop personal and social skills which enable them to resist the pressures and influences to smoke. Smoking prevention programs directed toward adolescents are widespread, but there has been little discernible effect. Smoking among adolescents has not decreased appreciably over the past five years (Cleary et al., 1988).

Some principles seem to emerge from this research which could aid in the development and implementation of prevention smoking programs sensitive to gender and peer context. Myths and biases about adolescent smoking need to be dispelled and gender specific issues which have been

heretofore overlooked, incorporated. One bias is the assumption, often implicit, that what deters males from smoking will be equally effective in detering females.

As in any study which employs secondary data analysis, limitations exists which affect the results and conclusions drawn. Although the Waterloo Smoking Prevention Project has provided us with access to valuable information on adolescent smoking behaviour, it limits our analysis with regard to peer group structures. Future research could examine mutual friendship patterns or reciprocal friendship choices. These types of friendships may be more influential on adolescent smoking. Research which addresses mutual friendship patterns would provide deeper insights into friendship intensity and cohesiveness, two prominant forces leading to conformity.

The present study examines the relationship between smoking intentions and peer group networks at one time point, which limits possibilities for determining causal influence. Our analysis suggests a high degree of association between boys' and girls' smoking intentions and different peer group networks but, we are not able to determine the exact nature of and changes in peer group influences over time. This is an issue which needs to be addressed in future research.

Smoking initiation and continuation may be as much a function of social context, particularly peer and familial dynamics, as of individual choice. This is true for both adolescent boys and girls, but is more true for girls who seem to be more firmly imbedded in peer and kinship networks which have considerable sway over their behaviours. Smoking prevention programs directed toward female adolescents might do well to be more group-oriented rather than individual and decision-making based. Building in the workings of peer networks might go a long way toward preventing smoking among adolescent girls.

In developing smoking prevention programs targetted to adolescent girls, specific attention should be paid to dispelling the myths adolescent girls hold about smoking. A prevalent myth is that the health risks associated with smoking among men do not apply to them. The apparent widespread acceptance of this myth may be testimony to the emphasis so far in smoking prevention programs on men's issues and the success these programs have had in getting that message across. It may now be

time to direct the message specifically to women and adolescent girls.

Another myth in need of dispelling by smoking prevention programs would be that girls, once smokers, have a more difficult time quitting than boys. This myth, too, may be a result of smoking prevention being thus far not only targetted to men, while claiming to be gender neutral, but based on a male model. The orientation of most smoking prevention programs is to help the individual resist peer pressure. In many ways, this is a kind of macho triumph of individual will over group influence and as such may not be an attractive or viable option to many girls.

Other principles to be incorporated into future smoking prevention programs directed toward adolescent girls would be those that acknowledge the different reasons girls smoke -- i.e., weight control, to appear sexy, etc.. By showing that these are not good reasons, in the context of the peer group, smoking prevention programs might be more successful. Similarly, specific attention to the particular health risks faced by girls who use oral contraceptives, for example, seems cruically important to smoking prevention programs of the future.

Smoking prevention thus far has worked in making people more aware generally of the problems associated with smoking, but that the programs have been inadequate to "bringing in" girls and women. The time now seems ripe for substantial modification of the approach to specifically include women. The Surgeon General's goal of a "smoke free society by the year 2000" affords us an ideal opportunity to initiate new and innovative strategies for addressing the smoking issue, in gender context.

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